

CLAIMS

1. A method of automatically finding one or more answers to a natural language question in a computer
5 stored natural language text database, wherein said natural language text database has been analyzed with respect to syntactic functions of constituents, lexical meaning of word tokens, and clause boundaries, and wherein said natural language question comprises a
10 question clause, comprising the steps of:
analyzing a computer readable representation of said question clause with respect to syntactic functions of its constituents and the lexical meaning of its word tokens;
15 defining, in response to the analysis step, a set of conditions for a clause in said natural language text database to constitute an answer to said question clause, said conditions relating to the syntactic functions of constituents and the lexical meaning of word tokens in
20 said clause;
identifying clauses in said natural language text database that satisfy said conditions; and
returning answers to said question clause by means of the identified clauses that matches said conditions.
25
2. The method according to claim 1, wherein said set of conditions in the defining step comprises:
a verb condition stipulating that a clause constitutes an answer to said question clause if a
30 lexically headed constituent having the syntactic function of main verb of said question clause has a corresponding lexically headed constituent in said clause bearing the syntactic function of main verb and having an equivalent lexical meaning.
- 35
3. The method according to claim 1, wherein said set of conditions in the defining step comprises:

7. The method according to claim 1, wherein said set of conditions in the defining step comprises:

5 a time adverb condition stipulating that a clause constitutes an answer to said question clause if a lexically headed constituent having the syntactic function of time adverb of said question clause has a corresponding lexically headed constituent in said clause having the syntactic function of time adverb and having
10 an equivalent lexical meaning.

8. The method according to claim 1, wherein said set of conditions in the defining step comprises:

15 a causal adverb condition stipulating that a clause constitutes an answer to said question clause if a lexically headed constituent having the syntactic function of causal adverb of said question clause has a corresponding lexically headed constituent in said clause having the syntactic function of causal adverb and having
20 an equivalent lexical meaning.

9. The method according to claim 1, wherein there is an interrogative pronoun in said question clause, further comprising the step of:

25 determining the syntactic function of the queried constituent of said question clause in response to the analysis step and said interrogative pronoun.

10. The method according to claim 9, wherein the
30 syntactic function of the queried constituent of said question clause is determined as the syntactic function of said interrogative pronoun.

11. The method according to claim 9, wherein the
35 analysis of lexical meaning of word tokens comprises an analysis of the broad semantic class of each word token of said natural language text database, and wherein the

broad semantic class of the queried constituent is determined in response to the interrogative pronoun.

12. The method according to claim 1, further
5 comprising the step of:
extracting from said natural language text database portions of text comprising clauses satisfying said conditions.

10 13. A system for automatically finding one or more answers to a natural language question in a computer stored natural language text database, comprising:

storage means comprising said natural language text database which has been analyzed with respect to
15 syntactic functions of constituents, lexical meaning of word tokens, and clause boundaries;

analyzing means for analyzing a computer readable representation of question clause of a natural language question with respect to syntactic functions of its
20 constituents and lexical meaning of its word tokens;

defining means, operatively connected to said analyzing means, for defining, in response to an analysis performed by the analyzing means, a set of conditions for a clause in said natural language text database to
25 constitute an answer to said question clause, said conditions relating to the syntactic functions of constituents and the lexical meaning of word tokens in said clause; and

answer finding means, operatively connected to said storage means and said defining means, for identifying in
30 said natural language text database clauses that satisfy said conditions and for returning answers to said question clause by means of said clauses that satisfy said conditions.

35

14. A computer readable medium having computer-executable instructions for a general-purpose computer to perform the steps recited in the claim 1.

- 5 15. A computer program comprising computer-executable instructions for performing the steps recited in the claim 1.

Patent Application No. 10/200,000